Application No.: 10/707,507 Docket No.: 22171-00011-US

REMARKS

Claims 1-6 remain pending in this application. Claim 1 is independent. Claims 1 and 2 have been amended, and no claims have been added or canceled by this amendment.

Withdrawal of the rejection of claims 1-6 under 35 U.S.C. §103(a) as being unpatentable over Morton et al. (US 3,963,986) in view of Akram et al. (US 6,246,245) is requested.

At the outset, Applicant notes that, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, ***the prior art reference must teach or suggest all the claim limitations***.[1] Further, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.[2]

The applied art does not teach or suggest all the claimed limitations of at least independent claim 1, as amended.

Applicant's Disclosure

By way of background, applicant's disclosed invention integrates the function of the conventional space transformer into the printed circuit board 110. This is in contrast to the applied art, as discussed below.

Distinctions over Morton et al.

Morton et al. disclose a programmable interface contactor structure. Referring to FIG. 2 and FIG. 7, the programmable interface contactor structure comprises three main subassemblies: a printed circuit board 1, a space transformer structure 2, and a probe assembly 3. Obviously, the

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[1] *See* MPEP §2143.
[2] *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) and *See* MPEP §2143.

programmable interface contactor structure is exactly the conventional probe card described in the background art of the present application.

On the contrary, applicant's disclosed probe card 100 comprises two main subassemblies: a printed circuit board 110 and a probe head 200, without a conventional space transformer, since ***applicant's disclosed invention integrates the function of the conventional space transformer into the printed circuit board 110.***

The testing pads 31B are positioned on the bottom surface of the space transformer die 10, which is further embedded inside the printed circuit power board 9 and the plate 7, as shown in FIGS. 1 and 2 of Morton et al. In addition, conductive pads 31B supported on a planar surface of space transformer die 10 are ***spaced and arranged to correspond*** to the conductive pads 31A of the probe assembly (column 8; line 50-53), and an electrical interface between the space transformer and the probe assembly is formed by the array of conductive pads 31A and 31B when the programmable interface contactor structure is assembled.

Consequently, ***the testing pads 31B are NOT positioned on the upper surface of the printed circuit power board 9***. Besides, the testing pads 31B are not connected to a test machine directly, but connected to conductive wires 11.

In contrast, Applicant's testing pads 124 are positioned on the upper surface 122 of the printed circuit board 110 and separated by a second pitch 126, which is substantially the same as that on a test machine, so that testing pads 124 can ***directly*** connected to the test machine.

Obviously, ***the testing pads 31B of Morton et al. is different from the testing pads 124 of the claimed invention***. Particularly, the testing pads 31B are parts of the spacer transformer die 10, but the present probe card 100 does not include such space transformer die.

As mentioned above, the conductive pads 31B supported on a planar surface of space transformer die 10 are ***spaced and arranged to correspond*** to the conductive pads 31A of the probe assembly (column 8; line 50-53), and an electrical interface between the space transformer and the probe assembly is formed by the array of conductive pads 31Aand 31B when the

programmable interface contactor structure is assembled. That is, the conductive pads 31A and 31B are designed to contact directly, and there is not a conductive wire connecting conductive pads 31A and 31B, as shown in FIG. 1. Consequently, Morton et al. does not disclose the present conductive wires 128 separated by a second pitch 126 in an uppermost laminate 120 of the printed circuit board 110 and separated by the first pitch 220 in a bottommost laminate 150 for electrical connecting the testing pads 124 to the probes 210.

As to the probes 31 in Morton et al., each of the probes 31 terminates in a discrete conducive pads contained within an array of discrete conductive pads 31A supported upon a surface of suitable dielectric material (column 8; line 47-50), and there is not a conductive wires connecting the conductive pads 31A and 31B, which is designed to contact directly, as discussed in the above paragraph. That is, probes 31 disclosed in the '986 are NOT connected to a conductive wire, which further connect to testing pads 31B. Obviously, the connection between the probes 31 and the testing pads 31B in Morton et al. is different from that between Applicant's probes 220 and the testing pads 124.

Distinctions over Akram et al.

Akram et al. disclose contact members 58 separated by a pitch P1, contact pads 60 separated by another pitch P3 larger than P1, and conductors 64 ***horizontally*** connected to the contact members 58 and 60 at the same plane, as shown in FIG. 6A, which is a horizontal sectional view of FIG. 6.

In contrast, Applicant's disclosure uses conductive wires 128 within the ***vertically*** stacked laminates to ***vertically*** connect the probes 210 separated by the first pitch 220 and the testing pads 124 separated by second pitch 126. In other words, Applicant's disclosure vertically shrinks the space between paths of electrical signal, which can be integrated into the vertically stacked laminates. In distinction, Akram et al. horizontally shrinks the space between paths of electrical signal, which is not allowed to be integrated into the vertically stacked laminates.

In view of the above discussion, the disclosures of both Morton et al. and Akram et al. are different from Applicant's disclosure, and different from the invention claimed in at least claim 1.

Distinctions of the Claimed Invention Over the Applied Art

In particular, the applied art does not teach or suggest an integrated circuit probe card which includes, among other features, "...a circuit board including a plurality of laminates and having an upper surface and a bottom surface...a plurality of testing pads ***provided on the upper surface and separated by a second pitch larger than the first pitch***...wherein the conductive wires are separated by the second pitch in an uppermost laminate and separated by the first pitch in a bottommost laminate for electrically connecting the testing pads to the probes," as recited in independent claim 1, as amended.

Therefore, since the applied art does not teach or suggest all the claimed limitations, reconsideration and allowance of independent claim 1 are respectfully requested. Further, since dependent claims 2-6 variously and ultimately depend from allowable claim 1, allowance of these claims is also requested, without recourse to the further patentable subject matter contained therein.

Conclusion

In view of the above amendments and remarks, Applicant believes all pending claims 1-6 in this application are in condition for allowance.

In the event that the Examiner believes an interview would be helpful in resolving any outstanding issues in this case, the undersigned attorney is available at the telephone number indicated below.

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Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 22171-00011-US from which the undersigned is authorized to draw.

Respectfully submitted,

By _____

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